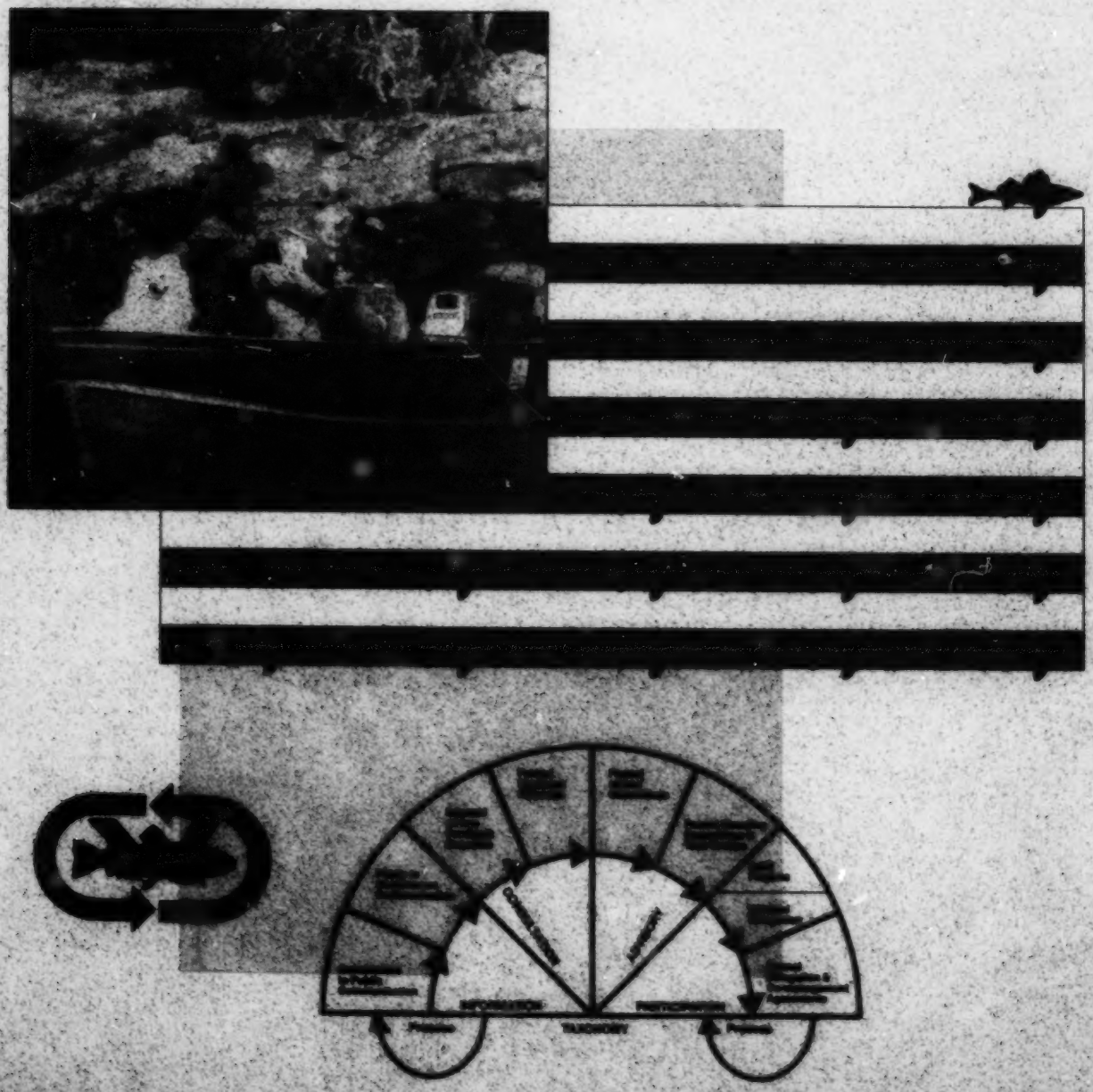
Saskatchewan
Parks and
Renewable
Resources

Fisheries
Branch

The Process of Developing a Strategic Plan for Managing Saskatchewan's Fisheries in the 1990s

Fisheries Management Report 92-1



92-06189/

FISHERIES MANAGEMENT REPORT 92-1

THE PROCESS OF DEVELOPING A STRATEGIC PLAN FOR MANAGING SASKATCHEWAN'S FISHERIES IN THE 1990S

by

A. R. Murray
Fisheries Branch

and

B. L. Smith
Resource Policy and Economics

Saskatchewan Parks and Renewable Resources
3211 Albert Street
Regina, Saskatchewan
S4S 5W6

February 1992

PREFACE

This paper represents an intermediate stage in the planning process for fisheries management in Saskatchewan in the 1990s. It describes events around the development of the plan, evaluates the process, states the proposals and summarizes stakeholder reactions to them.

In the sections entitled, "Co-management in Persective", "Achieving Balance", and "Principles, Process and Meta-process", we range far afield in our commentary and do not apologize for that. Having worked on the project off and on for more than three years, we had the opportunity to consider the subject from many perspectives, and spent considerable time in the realm of meta-process. More than once we found ourselves in a left-brain, right-brain situation and appreciate the problems these different approaches cause readers and stakeholders.

The ideas on balance and process-metaprocess were presented to the Second Annual Conference of the International Association for the Study of Common Property, Winnipeg, Manitoba, September 1991. The paper was entitled, "Balance: a critical principle in the design of a decentralized decision process".

Considerable interest was expressed at the Conference in the proposed goals, policies and strategies exercise in Saskatchewan. This was caused by including co-management as a pro-active fisheries management strategy. In most situations co-management is implemented when other means of resolving conflicts have failed. Saskatchewan's proposal to implement it before crises arise and to use it as a means of achieving short- and long-term goals was considered unusual. But the pro-active nature of the proposal, which leaves some stakeholders with the feeling they were not given sufficient information to evaluate co-management, has presented us with a hurdle we have had to clear over and over again. Nevertheless we believe sharing responsibility with stakeholders for managing a valuable common-property resource is the most appropriate means of meeting the challenges of the 1990s.

TABLE OF CONTENTS

PAGE

PREFACE i

INTRODUCTION 1

DEVELOPING A STRATEGIC PLAN FOR THE 1990S 2

Issues 2

Goals, policies and strategies 3

Fisheries management principles 5

STAKEHOLDER CONSULTATION 5

Internal consultation process 5

External consultation process 6

Stakeholder reaction to the proposals 7

Evaluation 11

CO-MANAGEMENT IN PERSPECTIVE 13

ACHIEVING BALANCE 16

PRINCIPLES, PROCESS AND META-PROCESS 19

Principles as values 19

Implementing process and metaprocess 20

CONCLUSIONS 22

ACKNOWLEDGEMENTS 23

LITERATURE CITED 23

APPENDICES

A. Goals, policies, strategies and tactics for fisheries management in Saskatchewan in the 1990s 25

LIST OF FIGURES

PAGE

1. A public involvement model 14

2. Hampden-Turner's (1990) model applied to decision-making processes 18

INTRODUCTION

A strategic plan looks at the past, the present and into the future. It is essential for planning and is comparable to navigating a ship. The navigator must know where he is, where he has come from and where he wants to go. A strategic plan examines the issues and assesses progress made and problems encountered in resolving them. It sets new goals and defines the policies needed to deal with the issues. A strategic plan also enables an organization to adjust its priorities and marshall its resources so that it can move to the position desired. As in navigation, the plan requires periodic evaluation and course corrections, or adjustments. The strategic plan for the 1990s does this by looking at the current situation regarding Saskatchewan's fisheries, evaluating progress made in the 1980s, and charting a course for the future.

About a decade has passed since the plan for the 1980s (Murray and Johnson, 1981) was first conceived and it is time for an evaluation. The fish resources of Saskatchewan are a priceless legacy, but the situation with respect to the fisheries, and the fish resources on which they depend, is critical. They are an important contributor to the recreation, tourism and renewable resource sectors of the provincial economy, but the current and projected utilization of species in demand, such as walleye, lake trout and pike, cannot be supported by the available supply everywhere. Walleye and lake trout stocks in lakes of the Churchill and Mackenzie River drainage basins, respectively, are being overharvested and are a matter of special concern. This overharvesting continues despite increased conservation and management activities in recent years. The strategic plan for the 1990s desribes a new, comprehensive and fundamentally different approach which will resolve these issues and ultimately make harvests commensurate with sustainable supplies.

The report which follows is divided into two sections. The first contains a description of the development of the proposed strategic plan (Murray and Smith, 1990), the results of the consultation process associated with the

release of the plan, the rationale for steps we took to resolve problems raised by stakeholders, and our evaluation of the process. This section also contains a model of the public involvement process and its relation to co-management. The second (Appendix A) contains the goals, policies, strategies and tactics comprising the strategic plan for fisheries management in the 1990s revised on the basis of comments received during the public consultation process.

DEVELOPING A STRATEGIC PLAN FOR THE 1990S

A strategic plan for the 1990s, entitled, "Proposed goals, policies and strategies for fisheries management in Saskatchewan in the 1990s", was developed in 1989 and 1990 (Murray and Smith, 1990). It was patterned after a similar document prepared for the 1980s (Murray and Johnson, 1981) which subsequently resulted in the preparation of an action plan (Johnson, 1983) and its formal adoption by Cabinet. The plan for the 1980s was influenced by a concern for conservation and enhancement of fish resources, and the one for the 1990s by problems arising from inequitable allocation of fish harvests in Saskatchewan (Murray, 1989).

ISSUES

Allocation will be the principal fisheries management issue for the 1990s (Murray, 1989). The reasons are associated with flawed allocation of harvests among different user groups (Appendix A, Figure 1) which has occurred as a result of the public's perception of fish as an unlimited resource and unrestricted access to it. Three complex and interrelated issues arise from flawed allocation: loss of resource; conflict among users; and poor economic performance. In treating fish resources as common property, Saskatchewan failed to implement mechanisms to ensure harvests were within sustainable limits. Resolution of these issues will require fundamental changes in the way fish resources are perceived and managed by the people of Saskatchewan.

GOALS, POLICIES AND STRATEGIES

The issues influenced the derivation of goals, policies and strategies. The principal goal for fisheries management in Saskatchewan is to sustain the fish resources and use them to contribute to the social and economic welfare of Saskatchewan citizens. Secondary goals address the issues (Appendix A, Figure 2): maintain sustainable supplies of fish, enhance them whenever possible, and maintain and restore their habitats; reconcile the social, cultural, recreational and economic values of fish harvests on an individual lake basis; and provide opportunities for improving the economic performance of the fisheries.

There are three principal policies (Appendix A, Figure 2), the key one of which is to involve stakeholders in fisheries management and allocation decision-making processes. Allocations which do not reflect stakeholder values are a major source of conflict among stakeholders. They can be resolved through a co-operative process that offers stakeholders an active role in making decisions. Involving stakeholders attempts to reconcile differing values and uses of the resource, and at the same time, allocate harvests to those who can use them in the most beneficial ways. This rationalization will enable stakeholders to priorize economic growth and diversification of fisheries in which they have interests and concerns.

The strategies are re-statements of the policies (Appendix A, Figure 2). Co-management is placed in a central position because it is linked to conservation and rationalization. Conservation includes a wide range of fisheries management activities designed to improve fish supplies and habitat. It is a popular but superficial strategy given the nature of the issues.

Co-management and rationalization were proposed to address the root of the problem in two different ways (Murray and Smith, 1990). First, co-management enables stakeholders to have a direct role in the design and workings of resource management decisions. Second, rationalization provides a system of transferable property rights in the management options.

Each strategy comprises several tactics (Appendix A, Figure 3). Key tactics include: devolving decision-making responsibility to stakeholders; involving stakeholders in the management process; encouraging stakeholders to determine the best uses for fish harvests at lakes in which they have interests; regulating harvests by establishing total allowable catches (TACs) and quotas; and establishing a mobile management team to assist regional biologists.

The adversarial relationship which currently exists among the various user groups, and between these groups and government, seldom permits fisheries managers to assume positive roles in their dealings with stakeholders. A feature of this ongoing antagonism is the continual erosion of conservation principles, policies and regulations to satisfy the lobbying, desires and complaints of individuals and groups.

The adversarial relationship results principally from the allocation process. Allocation of scarce resources, such as fish, involves two types of decisions (Calabresi and Bobbitt, 1978). The first determines how much resource is available, and the second determines who gets it. When both types of decisions are made by the same institution, scarce resources are often allocated in ways intolerable to society, and the choices are described as "tragic".

Three options exist for allocating scarce fish resources (Murray, 1989): maintain the centralized government approach; adopt a centralized public approach; or adopt a decentralized shared approach involving government and public. In the first, both allocation functions occur within government, public involvement is limited, and the major issues are not addressed. In the second, both functions occur within a single public body, which has the merit of involving stakeholders in the process, but it prevents government from fulfilling its constitutional role of conserving and managing a resource it owns. The third option is a decentralized approach involving government and stakeholders. Responsibility for allocation is shared, with government retaining the power to determine the amount of resource available, and stakeholders receiving power for assigning the resource to eligible users.

The process for transferring power and responsibility from a central authority to decentralized local authorities is known as devolution. Devolution has the potential for providing responsible local decision-making mechanisms capable of directly addressing the key issue of flawed allocation. If truly representative local committees receive real responsibility for allocation and management of fish resources in which they have stakes, they will develop a sense of stewardship, and at the same time, defuse local conflicts, mitigate demand, achieve more equitable allocation of fish harvests, and increase the value of the resource.

FISHERIES MANAGEMENT PRINCIPLES

Seven fisheries management principles are proposed (Appendix A):

1) retain provincial responsibilities for fisheries management;
2) maintain healthy ecosystems and species diversity;
3) manage fish populations on a sustainable basis;
4) provide fish to Treaty Indians as required by the Resources Transfer Agreement, 1930;
5) maintain diversity of opportunity;
6) maintain public access to fish resources; and
7) acquire data on the status of the fish resources and fisheries.

All principles affirm Saskatchewan Parks and Renewable Resources (SPRR) fisheries management philosophies and three (i.e., 3, 5 and 6) appear in formal policy statements. All were derived in response to concerns raised by Fisheries Branch staff to early drafts of the proposals.

STAKEHOLDER CONSULTATION

INTERNAL CONSULTATION PROCESS

Two groups of stakeholders were recognized: internal and external. The former include SPRR Fisheries Branch staff and the directors and members of SPRR Executive Committee; the latter include members of the public, user groups, fishermen, stakeholders, etc.

The internal consultation process commenced first and consisted of reviews of early drafts of the proposed plan followed by meetings at which the document was discussed. Joint development with internal stakeholders would have been preferable but a decision to initiate and complete the plan on short notice prevented this. Two meetings were held with Fisheries Branch staff, October 20, and December 6, 1989. Two meetings were also held with the directors and Executive Committee, December 14, and December 21, 1989. Following these meetings, the document was revised several more times and discussed with the Director, Fisheries Branch, before being accepted, printed and released to the public in September, 1990.

EXTERNAL CONSULTATION PROCESS

The proposed plan (Murray and Smith, 1990) was released for external review and comment at a press conference held by the Minister, SPRR, September 6, 1990. Members of the Minister's Fish Advisory Committee attended and participated in the conference.

Notice of the availability of the paper and requests for comment were advertised by posters at all angling licence vendors and SPRR district and regional offices. The Minister also sent personal requests for reviews and comments to the leaders of ten major stakeholder groups, including the Federation of Saskatchewan Indian Nations, Saskatchewan Wildlife Federation, Saskatchewan Outfitters Association, the Metis Society of Saskatchewan and Saskatchewan Commercial Fishermen's Co-operative Federation Ltd. A follow-up letter was sent to these groups, November 16, 1990, repeating the offer of a presentation and requesting reviews and comments. Invitations for reviews, comments and presentations were also extended to six Government of Saskatchewan departments.

Numerous interviews were given to television, radio and newspapers, including five hours of open-line radio "phone-in" programs transmitted throughout northern Saskatchewan. In addition, presentations were made at numerous meetings, including: Saskatchewan Outfitters Association

(membership, executive and fisheries committees); six Saskatchewan Wildlife Federation regional meetings; Saskatchewan Commercial Fishermen's Co-operative annual meeting; commercial fishermen's co-operatives; and fly fishers.

The initial deadline for the process was December 31, 1990. The Federation of Saskatchewan Indian Nations and the commercial fishermen asked for additional time to enable them to discuss the implications of the proposed strategy with their members and consult with SPRR staff. As a result of these requests the deadline was extended to May 31, 1991.

STAKEHOLDER REACTION TO THE PROPOSALS

Internal stakeholdlers had two principal concerns: loss of control over management of the fish resources through devolution of responsibility and decentralization; and lack of detail in the strategies and tactics. The lack of formal operating guidelines, or principles, was believed to be a manifestation of devolution and would lead to an abrogation of provincial responsibility and authority. As stated above, the principles were derived as a formal affirmation of these.

The lack of detail in the strategies and tactics of the proposed plan was a major criticism of external stakeholders and was perceived as a fundamental weakness. In addition, many believed we should provide detailed solutions to at least some major problems, and in failing to do so, we also failed to recognize and affirm certain specific interests. Concern was expressed about the nature of co-management arrangements on individual lakes, how decisions would be made, power held, etc. This concern appeared despite informal co-management activities over the past ten years involving commercial fishermen's co-operatives, multiple-use lake management committees and joint fish stocking and enhancement. It was believed the lack of detail, coupled with devolution of responsibility, would enable stakeholders to manage fish populations and allocate fish harvests irresponsibly.

Other concerns centered around the issues. Some believed there are more than three. We believe there are three principal issues; others are either subsets of these and/or contributing causes of them (Appendix A).

Six of the ten groups of external stakeholders contacted provided written responses. In addition, verbal comments were received at meetings with stakeholder groups such as the Saskatchewan Wildlife Federation, the Saskatchewan Outfitters Association and the commercial fishermen's co-operatives. Comments were also received during two open-line radio programs broadcast throughout northern Saskatchewan.

The Federation of Saskatchewan Indian Nations (FSIN) complimented SPRR on its new and creative approach, and indicated general support for the strategies and tactics. Conservation measures were supported, including establishment of total allowable catches. Co-management was also supported, but concern was expressed because the principle of Treaty Indian access to the resource did not appear first. "Privatization" of the fish resource and ownership of access by non-Indians were also matters of concern. Bilateral discussions between FSIN and SPRR were requested, and full support withheld until issues of concern were clarified. The FSIN, which was complimentary regarding the initiative, and supportive of the overall direction, specifically requested the opportunity to have bilateral talks with Fisheries Branch prior to the implementation of a strategic plan. Talks have subsequently occurred between the FSIN and the department on a wide range of issues, including fisheries management.

The Saskatchewan Outfitters Association (SOA) expressed strong support for the strategy of conservation, including enhancement and rehabilitation activities. Initiatives which create high quality and low consumption angling opportunities were applauded. Support was expressed for co-management, however there was concern that government would abdicate its responsibility for fisheries management. Rationalization through individual transferable quotas (ITQs) also caused concern. The SOA requested the fish resource should continue to be treated as common property.

The Saskatchewan Commercial Fishermen's Co-operative Federation Ltd. (SCFCFL) passed a resolution at their annual meeting requesting that the consultation period be extended until December 1991, and that they be given funding to assist them in consulting fishermen. No other formal comments were provided. Informal comments at provincial and local meetings indicated full support for conservation and co-management but uncertainty about ITQs. Concerns were expressed that wealthy people or organizations, such as Greenpeace, would buy everyone out and deny them access to their livelihood.

The Saskatchewan Wildlife Federation (SWF) expressed support for conservation and enhancement, and for involving stakeholders in decision making and data acquisition through a co-management process. The organization stated that fish should remain a public resource.

The Tourism Industry Association of Saskatchewan (TISASK) expressed full support for conservation and co-management. Concern was expressed about the possibility that ITQs could result in loss of public access to the resource.

In general, both the internal and external consultation processes indicated that stakeholders felt the level of tactical detail was insufficient. As a result, all groups felt their specific interests may not be recognized and affirmed. Conservation was well received, with strong support from all groups and individuals. Co-management also received strong stakeholder support. Some concern was expressed about the lack of details for implementation, and minor concern that government would abdicate its responsibility for fisheries management. The seven principles reduced the level of discomfort and uncertainty.

Rationalization through the use of ITQs was not well received by any group and received positive responses from only a few individuals. Concern was expressed by virtually all stakeholders, including commercial fishermen, about private ownership of the resource, access to the resource being concentrated in the hands of a few individuals, and the resulting loss of the ability of the resource to provide for the wider public good.

Although ITQs were not well received, rationalization as a strategy was not challenged. That is, stakeholders did not indicate they did not want the economic performance of the fisheries improved, merely that they did not approve of this tactic. No other tactics to improve economic performance were suggested.

Tactics may be compared to tools in a toolbox. Tools have specific uses and none is suitable for every job. Some have general applicability and may be used for a variety of jobs; others have specific functions and may seldom be used. The presence of a tool in a toolbox does not indicate that it *is* used, only that it *may* be used.

ITQs were one of the tactics proposed in the strategy of rationalization (Appendix A). Although not accepted by all stakeholders, we have not discarded them. ITQs have specific uses: they are a means of allocating transferable or tradable rights to individual stakeholders to harvest specific quantities of fish. ITQs are simply one "tool" that may be used to improve the economic performance of a fishery at a lake. *They are not required at all lakes, and may only be used when all stakeholders agree it is in their best interests to do so.* As with a tool in a toolbox, it does not have to be used simply because it is there. Because they are utilized in many places in Canada and the world, and may be useful in Saskatchewan in future, we believe they should remain in the "toolbox". We have however given them less prominence.

In summary, the responses would permit proceeding with a strategic plan with strong emphasis on conservation and an experimental demonstration project approach to co-management. ITQs were not supported as a means of rationalizing the fisheries but other tactics are available and may be utilized.

EVALUATION

Evaluation of the stakeholder review process revealed two concerns. The first was the negative reaction to the use of ITQs by external stakeholders. The second was the request for detailed information on specific items, lakes and problems by all stakeholders.

The generally negative reaction to ITQs was unexpected. It was anticipated that, because of the existing flawed allocation process, stakeholders would be willing to adopt ITQs as a means of improving the economic performance of the fisheries. On the other hand, stakeholders seem prepared to work together and establish rules among themselves for sustainable use of the fish resources.

The request for specific information on selected details was also unexpected. We believed that providing detailed information on the strategies and tactics would detract from the presentation of concepts and make the proposals unnecessarily long and detailed. More importantly, these details would prevent stakeholders from developing their own solutions. In other words, if we know what needs to be done, why involve stakeholders in developing solutions? Nonetheless we are still challenged to provide detailed solutions to specific problems. Acceptance of the strategies and tactics as proposed seems like asking for *carte blanche*.

The reason may be that most people are familiar with one or two problems requiring specific solutions and are unable to extrapolate to more general solutions. This may be a so-called "right-brain, left-brain problem", that is, the stakeholder's approach is dominated by thinking in the left hemisphere which is analytical and seeks specific and detailed solutions (Parades and Hepburn, 1976). This thinking may be characterized as working from a single unifying plan, which is implemented one piece at a time with minimal reference to the overall goal. In contrast, right-brain thinking operates with reference to a beginning (goal), an end (objectives), and a point in between. The latter is the current situation which is continually being related to

objectives set on the basis of the goal and the tactics. Thinking is continuous and may be considered a series of improvisations so that each action is determined on an *ad hoc* basis.

Right-brain thinking involves dealing with uncertainty, an important component of decision making. Decisions are evaluated on the basis of their results or consequences. These can seldom be determined immediately because they and their determining factors are future occurrences. The future can mean tomorrow, next year, or five or more years from now.

As a result, the strategies and tactics are less than satisfying to some stakeholders because they do not address local problems and they decentralize the decision-making process. The plan permits detailed plans to be developed and implemented locally to resolve specific problems. We are firmly commited to decentralized decision making because it facilitates stakeholder involvement on the basis of individual waterbodies by enabling them to resolve their own problems.

Left-brain thinkers will seldom be satisfied with the lack of a detailed plan. The plan appears to leave too much to chance and the goodwill of the stakeholders. Yet centralized decision making cannot cope with the problems arising from 5,000 lakes and 150,000 fishermen because it becomes hopelessly bogged down in detail and conflict. The only solution is to decentralize and provide stakeholders with goals, principles, policies, strategies and tactics. They serve as guideposts and tools in implementing the plan while allowing stakeholders to resolve their problems in ways that best suit their needs.

If we are correct in our speculation about the divergence of left-brain, right-brain views, they will require more consideration in future management practices. Devolution, co-management and adaptive management techniques involve right-brain components in their processes, that is, they are non-linear, they are based on improvization and their outcomes are unpredictable. Even linear incremental processes will be subject to the uncertainty and ambiguity which characterizes the 1990s.

CO-MANAGEMENT IN PERSPECTIVE

Stakeholders and government have been working together in Saskatchewan for many years (Smith, 1990). This interaction may be illustrated by a public involvement model which begins with a simple movement of information, and ends with highly formalized co-management structures (Figure 1). Although the process is a continuum four stages may be recognized:

Information

Facts, knowledge, policies, programs and opinions are exchanged through a variety of methods, including pamphlets, presentations, letters, etc., in the first stage.

Consultation

In the second stage, two-way communication occurs during policy development enabling the public to provide feedback on existing policies and programs. This can include informal discussions and presentations, as well as more structured activities such as white papers, focus groups, etc.

Advisory

Formal committees and working groups provide guidance on specific issues or programs, e.g., Minister's Advisory Committees on Fish, Forestry, Wildlife and Parks in the third stage.

Participation

Joint activities, which range from involvement in basic management activities, such as fish stocking or hunter safety training, delegating responsibility and authority, and involving stakeholders at the decision table, are undertaken in the fourth and final stage. Participation is the only category in which stakeholders are involved to a degree which can be called co-management. Moreover activities considered co-management comprise only one portion of the category.

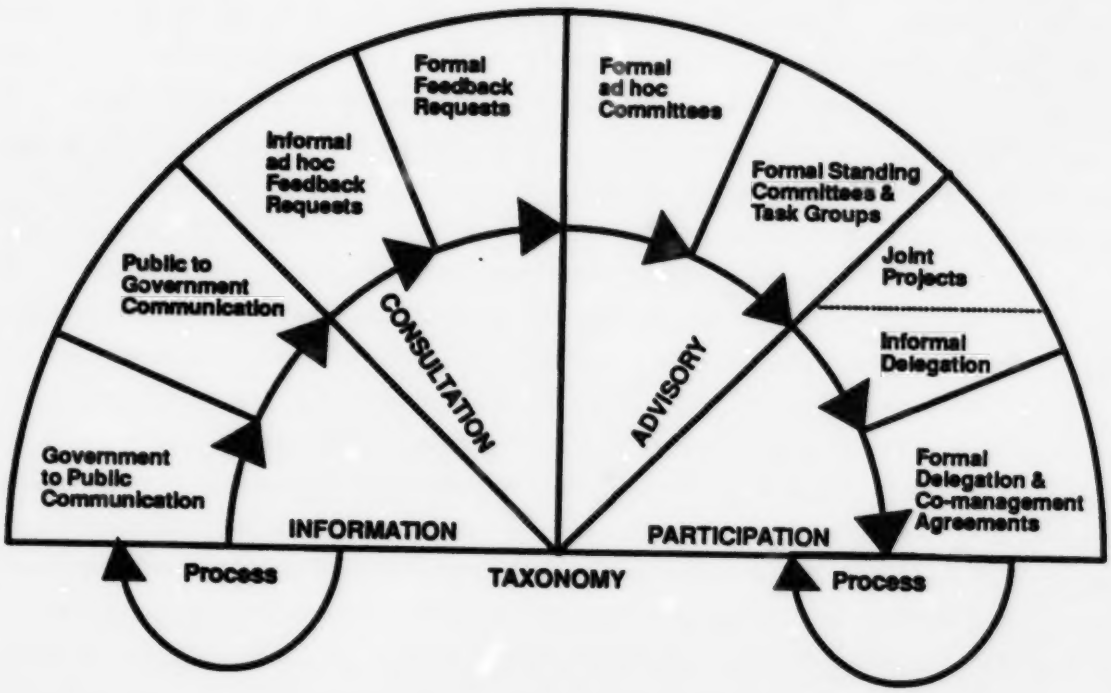


Figure 1. A public involvement model.

The model (Figure 1) is a static view of a dynamic process over which public and governmental interactions take place. It represents a progression through which most relationships will go towards co-management. Relationships seldom start with co-management: they usually begin with an information exchange, progress to consultation, become formal advisory relationships, and then move to levels embodying the sharing aspects of co-management.

Co-management is one outcome of the public involvement process, but because it is often the desired goal, the entire process is often erroneously described as co-management. Co-management begins when some degree of authority or responsibility for resource management or decision making is held by, or delegated to, stakeholders. The key elements are *co-operation* and *action* by involved parties working together.

Co-management is a *means* to improve management of renewable resources. Two different types of ends, or goals, may be recognized, one of which is highly visible and immediate, the other indistinct and distant. The short-range goal may be achieved when co-management supplements existing systems, usually centralized/bureaucratic decision-making processes, which fail to meet the needs and/or expectations of the stakeholders. In these cases the needs are relatively clear, and are often highlighted by conflict among stakeholders, or between stakeholders and government. Lasting resolution to conflict requires decentralized decision making to fully recognize local needs and priorities.

The long-range goal involves improving communication, and developing understanding and trust between government and stakeholder groups, or among stakeholder groups. Although there may not be an immediate pressing management need, long-term benefits will be achieved by avoiding conflict, and by "banking" good will and trust which can be utilized to handle difficult situations that may arise in future.

ACHIEVING BALANCE

Based on stakeholder feedback on the proposed strategy, two types of decision-making processes are called into question. The centralized process has not responded well to current situations in which fisheries management decisions have increased in complexity and frequency. Stakeholders expect the specifics of their individual situations to be fully considered, but a central process based on provincial policy has proven to be somewhat inflexible and non-adaptive. It also lacks the ability to weigh specific circumstances and fully consider local priorities, needs and participation. Local priorities may not receive full consideration in a centralized process because it tries to maintain a consistent provincial perspective.

In contrast, a decentralized decision-making process may give full consideration to local priorities and needs but fail to merge with other similar management situations into a unified process demonstrating consistent and equitable application throughout the province. There is little inherent in this process to provide stability and bind the otherwise unconnected local decisions into a network.

A contradiction results: stakeholders want a role in management decisions but they also want the central authority to limit local decision making. This means the process must facilitate local input, give full consideration to local priorities, needs and concerns, and at the same time, ensure sufficient structure to maintain functionality, stability and consistency. In other words, it must support decisions which demonstrate provincial stability, consistency and equity, maintain flexibility and adaptability to meet local priorities and needs, and provide opportunities for stakeholder involvement. These can be achieved by recognizing the contrasting elements and balancing them in a single process. The concepts to be balanced are: *stability with flexibility* and *consistency and equity with responsiveness*.

A balance between the consistency, equity and stability offered by a central structure, and the flexibility and responsiveness of a local structure, may be achieved by combining central principles and local process.

The fisheries management principles (Appendix A) provide a framework for local decision making. They also provide the consistency, equity and stability required by all decentralized decision-making structures. Specific details of individual decentralized processes are left to local stakeholders to determine.

The following depicts the concept of balance and illustrates the dynamic tensions at work to maintain balance once it has been achieved. Some old radio tuners had two tuning dials: coarse and fine. The coarse tuner was used to move quickly to the general location of the desired station. It could produce recognizable sound, but not one that was satisfying for long periods of listening. Once the general location of the station was determined, the fine tuner was used to achieve optimum clarity.

In the design of a balanced decision process, we see a framework created by a set of central principles and values as the coarse tuner, and the mechanism of local stakeholder involvement as the fine tuner. The central principles can put us in the vicinity of the desired result, but local input/direction is required to "fine-tune" the output.

Balance may also be illustrated as a recursive system with perpetual tension between opposites (Hampden-Turner, 1990; Figure 2). The tensions are on opposite sides of a circle connected by ropes frayed at the centre. The frayed ropes illustrate the delicate nature of the relationship. Too much force, or giving too much weight to one side, will cause the ropes to break and the situation to go out of control. Opposing sides are kept in balance by constant monitoring, feedback and adjustments.

The key factor in the development of a decentralized decision process is the relationship between the amount of control retained by the central authority and the amount vested in the local community or stakeholders (Figure 2). Each has its own strengths and weaknesses, which tend to be counter-balanced by those opposite, i.e., the strengths of a central decision-making process and the weaknesses of the decentralized process, and vice versa. The

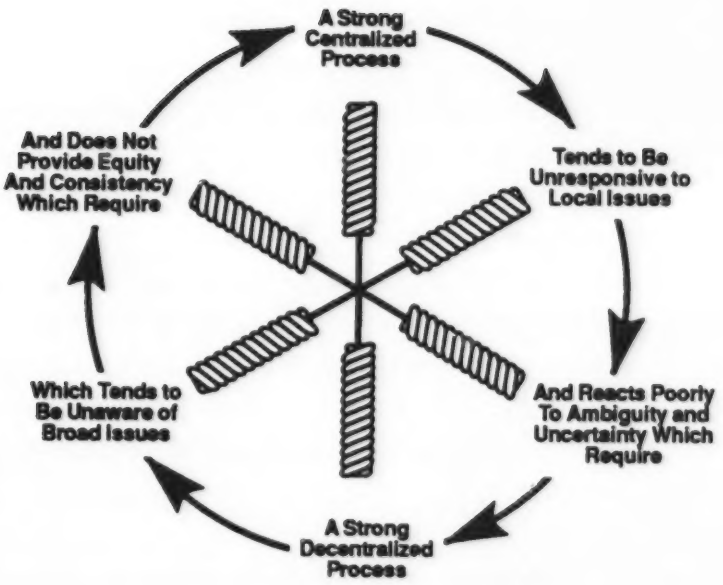

A Strong Centralized Process
Tends to Be Unresponsive to Local Issues
And Reacts Poorly To Ambiguity and Uncertainty Which Require
A Strong Decentralized Process
Which Tends to Be Unaware of Broad Issues
And Does Not Provide Equity And Consistency Which Require

Figure 2. Hampden-Turner's (1990) model applied to decision-making processes.

model indicates tension in the relationships between opposing elements, and the need for continually adjusting balance.

PRINCIPLES, PROCESS AND META-PROCESS

PRINCIPLES AS VALUES

Rokeash (1975) defined a value as "an enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence." He identified two types of values: instrumental values, which are modes of conduct; and terminal values, which describe end-states of existence. Thus values can be stated to describe how things are to be done and what is to be achieved.

The fisheries management principles (Appendix A) are instrumental rather than terminal values. Although the nature of desired end-states may be implicit, the principles are explicit statements of how the department should act, and thus are more easily seen as instruments.

Policy documents frequently incorporate a set of principles which establish a code of values reflected in the discussion of policies, strategies and actions. Describing values first sets the tone for what follows. The fisheries management principles were developed to anchor the decision-making processes and provide a framework to give them stability. By explicitly stating the principles, we publicly affirm our choice of values and establish them to support a pattern of actions over time.

Recent documents such as, "A Wildlife Policy for Canada" (Wildlife Ministers' Council of Canada, 1990), and Canada's Green Plan (Government of Canada, 1990), also contain statements of principles. The former identifies nine principles to guide the policy statements and include citizen stewardship, need for research, public involvement, sustainable management, importance of habitat, and special role of native people. The latter has a

section which begins, "The Government of Canada has adopted the following principles as the basis for its own efforts to secure a safe and healthy environment, and a sound and prosperous economy". The stated principles are: respect for nature; economy-environment relationship; efficient use of resources; shared responsibility; leadership; informed decision-making; and an ecosystem approach.

Affirming our choices is only half the equation, however, for as Calabresi and Bobbitt (1978) observed, "...it is by the values that are foregone no less than by those that are preserved at tremendous cost that we know a society's character...". In other words, omissions may be just as "visible" as inappropriate statements, and while we acknowledge those values which are stated, we should be aware of those which are not.

IMPLEMENTING PROCESS AND METAPROCESS

Achieving and maintaining balance in a decentralized fisheries management and allocation environment will require attention to process and meta-process. **Process** is concerned with achievement of management objectives and meeting local priorities, problems and needs; **meta-process** involves repeating the process with consistency and equity, and affirming central principles for co-management wherever it is implemented.

Implementation of decentralized decision making will involve two outcomes: one specific to the management of the individual water body or area; and the other concerned with the way in which the process was facilitated and how the principles were applied. The latter may be considered as meta-process outcomes. We suggest that during the discussion and development stages of the co-management process, Fisheries Branch be represented by a two person management team. One, a regional fisheries biologist, would be concerned with process, i.e., the specific management focus of the group. The other, a provincial co-ordinator, would oversee the meta-process, i.e., ensure the principles are implemented consistently as a framework is developed. The co-

ordinator would also focus on learning what could be applied to the implementation of co-management in other situations in order to make it an adaptive and consistent process.

We recommend "mobile management teams" as a tactic to facilitate co-management. We use the term "mobile" because we anticipate that one or both of the individuals may not reside permanently in the areas in which decentralized processes are being established.

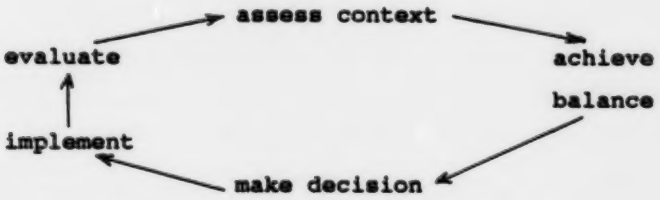
The knowledge and skills of the individuals may also be different. The regional fisheries biologist should possess knowledge of specific lakes, fisheries, fish populations and problems, as well as local situations and people. This person should possess strong interpersonal and communication skills, cross-cultural awareness, and an ability to facilitate and negotiate. In contrast, the co-ordinator must be able to keep situations in perspective in order to assess them, and must have a good understanding of group dynamics, facilitation skills and systems thinking. This individual must also be able to assess the situation requirements on site, and be flexible enough to allow the type of involvement to evolve with the details of the situation.

As described above, co-management and decentralization of decision-making processes are parts of a spectrum along which users are involved to various degrees with resource management. Facilitation of decentralized decision-making processes will require different actions in individual cases. Some situations may require local input into specific decisions with limited ongoing involvement in the details of implementation, and others may be highly complex and require the development of permanent mechanisms and structures.

An *ad hoc* process could involve the following steps:

Monitoring and evaluation are not inherent in this process and would become the responsibility of Fisheries Branch.

In contrast, an ongoing process would require the inclusion of a single activity and assume a different form:



The latter facilitates the adjustment of goals and objectives over time, and a continual balancing of the process as resource and stakeholder circumstances change. Since this process is ongoing, monitoring and evaluation become part of the group responsibility.

CONCLUSIONS

Difficulties caused by the common property nature of the fish resource resulted in a strategy paper (Murray and Smith, 1990) which proposed to formalize two primary mechanisms for solution - a social mechanism via a decentralized decision-making process (co-management) and a means for improving the economic performance of the fisheries.

Consultation with stakeholders required resolution of a major dilemma with respect to the nature of decision processes. Complexity, rapid change and uncertainty were identified as major problems in fisheries management, and a solution was proposed which involved local decision making through co-management structures. Early stages of the consultation process revealed a degree of unease about the potential lack of stability and consistency inherent in totally decentralized decision-making processes.

As consultations progressed, seven fisheries management principles were developed to answer the concerns. The principles were intended to provide a framework within which a variety of local initiatives could be developed without sacrificing consistency or equity. Although both the principles and

the local process were generally well received by all stakeholder groups, it was apparent that the principles were essential, and that they had to be clear and firm in order to give stakeholders confidence in the process.

The achievement and maintenance of a balance between the central principles and the local process will be an ongoing requirement of a decentralized decision process. A management team approach, in which different individuals oversee process and meta-process, is suggested.

It appears that successful implementation of a decentralized decision-making process will require balance between stability, consistency and equity (as provided by the central principles) and flexibility and responsiveness (as provided by local input).

ACKNOWLEDGEMENTS

We wish to acknowledge the assistance, comments and suggestions of our colleagues, particularly Mr. P. C. Naftel, Director, Fisheries Branch. We also wish to acknowledge the assistance of the many stakeholders who took the time to examine our proposals and provide us with comments.

LITERATURE CITED

Calabresi, G., and P. Bobbitt. 1978. Tragic choices. W. W. Norton & Company, New York. 252 p.

Government of Canada. 1990. Canada's Green Plan for a healthy environment. Environment Canada, Ottawa.

Hampden-Turner, C. 1990. Charting the corporate mind. The Free Press, New York. 240 p.

Johnson, R. P. 1983. Saskatchewan Fisheries Policy - Action Plan. Saskatchewan Parks and Renewable Resources, Regina. 12 p.

Murray, A. R. 1989. Fisheries allocation: strategies for managing Saskatchewan's fisheries in the 1990's and beyond. Saskatchewan Parks, Recreation and Culture, Fisheries Branch, Regina. Fisheries Management Report 89-1. 169 p.

Murray, A. R., and R. P. Johnson. 1981. Proposed goals and strategies for fisheries management in the 1980's. Northern Saskatchewan, La Ronge, and Saskatchewan Tourism and Renewable Resources, Regina. 79 p.

Murray, A. R., and B. L. Smith. 1990. Proposed goals, policies and strategies for fisheries management in Saskatchewan in the 1990s. Saskatchewan Parks and Renewable Resources, Fisheries Branch, Regina. Manuscript Report. 55 p.

Parades, J. A., and M. J. Hepburn. 1976. The split brain and the culture-and-cognition paradox. Current Anthropology, 17(1): 121-127.

Rokeash, M. 1975. Values education: theory, practice, process, prospects. Wilfred Laurier University Press, Waterloo, Ontario.

Smith, B. L. 1990. Consultation and co-management: stakeholder involvement in the management of Saskatchewan's fisheries. Saskatchewan Parks and Renewable Resources, Fisheries Branch, Prince Albert. 31 p.

Wildlife Ministers' Council of Canada. 1990. A wildlife policy for Canada. Environment Canada, Canadian Wildlife Service, Ottawa. 29 p.

APPENDIX A

GOALS, POLICIES, STRATEGIES AND TACTICS FOR FISHERIES MANAGEMENT IN SASKATCHEWAN IN THE 1990S

TABLE OF CONTENTS

PAGE

INTRODUCTION.....26
DEFINITIONS.....26
ISSUES.....27
GOALS.....33
POLICIES.....35
FISHERIES MANAGEMENT PRINCIPLES.....37
STRATEGIES AND TACTICS.....39
IMPLEMENTATION.....52
CONCLUSION.....58

LIST OF FIGURES

PAGE

1. Issues affecting Saskatchewan's fisheries for the 1990s.....29
2. Goals, issues and strategies for Saskatchwean's fisheries for the 1990s.....34
3. Strategies and tactics for Saskatchewan's fisheries for the 1990s.....40

INTRODUCTION

The strategic plan for the 1990s is based on a discussion paper released in 1990 which examined the issues confronting the availability and use of fish resources in Saskatchewan. The plan, which resulted from six months of consultation with major user groups and other stakeholders, developed management goals and strategies to meet the issues.

Almost a decade has passed since the strategic plan for the 1980s was prepared and it is time to implement a new plan. The situation with respect to the fisheries, and the fish resources on which they depend, is critical. The current and projected utilization of species in demand, such as walleye, lake trout and pike, cannot be supported by the available supply everywhere. Demand is excessive, and although some successes have been achieved in increasing supply, the amount of fish that can be produced by, and harvested from, aquatic ecosystems is finite and limited. The strategic plan for the 1990s describes a new, comprehensive and fundamentally different approach to make harvests commensurate with sustainable supplies.

DEFINITIONS

This paper uses some terms in specific and precise ways. The following definitions apply:

ALLOCATION: A process for sharing the available fish harvests on individual lakes which has two steps: determining the amount of resource available; and determining who gets what portion. The first step is biological and is based on supplies of fish present. The second step may be achieved by stakeholders reconciling differing values and uses through consensus and determining which of them are best.

FISHERMAN: A male or female person who fishes.

GOAL: A statement of general purpose addressed by broad courses of action or strategies. Goals are long-term in outlook, may not be attainable and cannot be evaluated.

ISSUE: An unfulfilled public need or problem which is, or may become, a government responsibility.

OBJECTIVE: A precise statement of purpose directed to a concrete administrative endpoint. Objectives are specific, attainable, measurable and amenable to evaluation. Objectives are usually set annually and in relation to goals, strategies and tactics.

POLICY: A course of action resulting from a re-statement or interpretation of an issue to render it amenable to administrative action consistent with prevailing political opinion.

STAKEHOLDER: A person with a concern for, or dependence on the fish resource.

STRATEGY: A plan or course of action directed to accomplishing a particular goal, addressing a particular strategy or reconciling a goal with an issue. Strategies are broad in scope and have long time horizons.

TACTIC: A procedure for achieving an objective. Tactics are narrow in scope, have short time horizons, seek objective answers to problems, and concentrate on feasibility and consistency.

ISSUES

Although the situation facing Saskachewan's fisheries is serious, it is not without solutions. These solutions, which are in the form of goals, policies, principles, strategies and tactics, must address the major problems and issues. Three principal issues must be resolved: conflict among the stakeholders of the resource; loss of fish and fish habitat; and poor economic performance of the fisheries. These issues, shown in Figures 1 and 2, are interrelated and complex.

CONFLICT AMONG THE STAKEHOLDERS

The principal conflicts are between commercial and recreational fishermen, and between traditional resource users and other fishermen. Conflicts have also developed within groups as outfitters - and commercial fishermen - compete with each other for the same lakes and fish. These are aggravated because of differing values, claims and rights as well as the unequal distribution of people and fish resources in Saskatchewan. In addition, they have social, cultural, recreational and economic components, which add to their complexity. Most too have an emotional aspect which makes them particularly difficult to deal with.

CAUSES

- Flawed allocation of harvests among the different user groups has occurred as a result of the virtually unrestricted access to the resources and by the public's perception that fish resources shall be free to everyone (Figure 1).

  - Flawed allocation is:
    - inequitable: all stakeholders are not treated alike;
    - inefficient: fish populations and earnings have been lost;
    - insensitive: local values and needs are not always considered; and,
    - not comprehensive: fish harvests have been allocated in a piecemeal fashion and no one is satisfied with the fish they receive.

- These problems stem from the province treating the fish resources within its boundaries as common property.

  - This led to the adoption of a multiple use policy which means that fish in most Saskatchewan lakes may be harvested by different groups of fishermen. This has resulted in expectations that no lake would be fished by only one group.

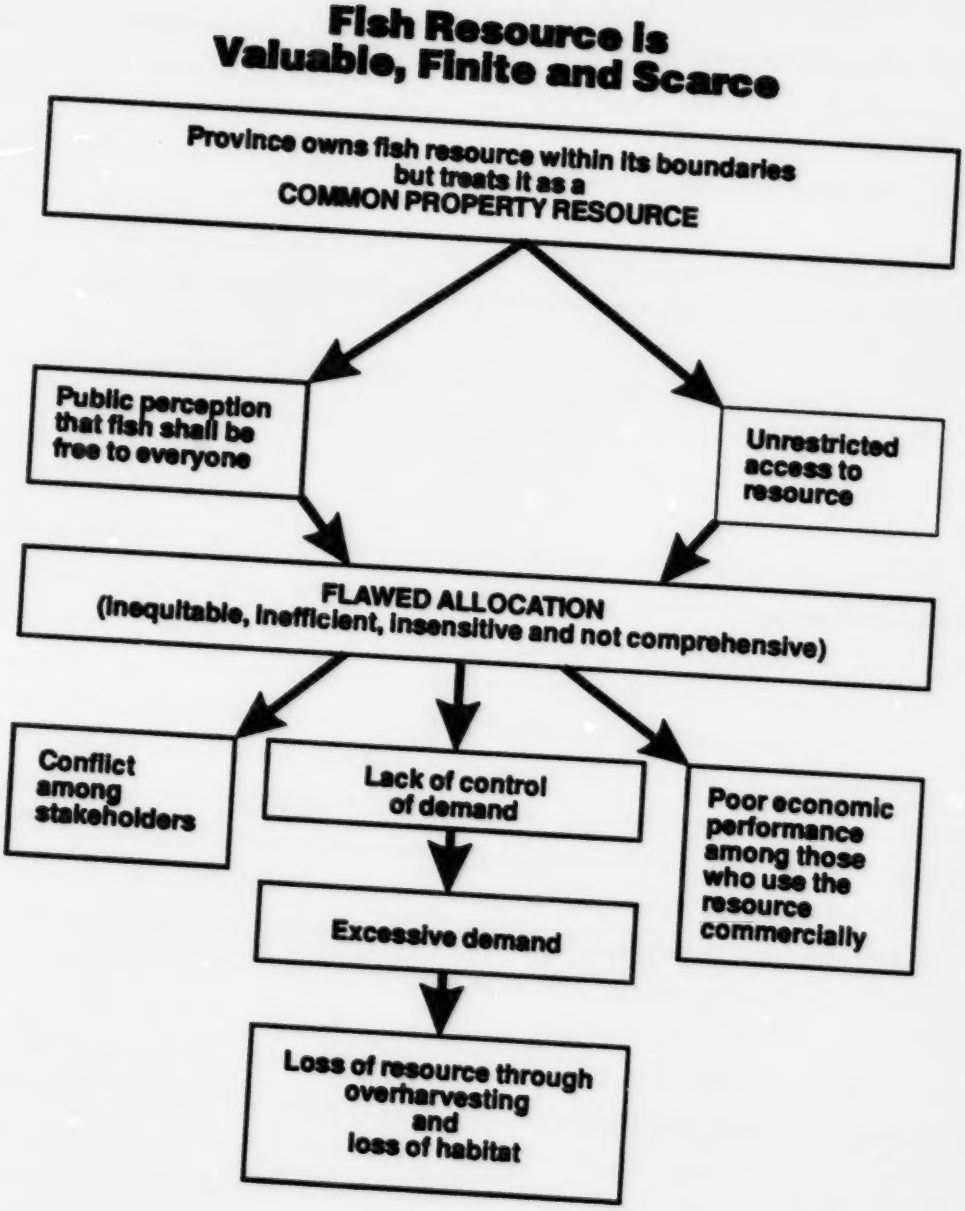


Figure 1. Issues affecting Saskatchewan's fisheries in the 1990s.

- Saskatchewan is one of the last jurisdictions in North America to use this policy.

- The policy has shortcomings: it may have been acceptable when there were fewer fishermen and access to most lakes was difficult, but the large numbers of fishermen and easy access to virtually all lakes in the province have resulted in excessive demand and harvests of fish.

- Stakeholders with differing sets of values utilize the same resources and disagree on how harvests should be shared.

  - This problem is complex because it involves reconciling the different uses of the resources, which have tangible and intangible values.

  - Reconciling these is difficult because few mechanisms are available for performing this task. Moreover the values themselves are changing rapidly at a time when society is undergoing great changes.

  - The rapid growth of recreational fishing in Saskatchewan, with its social, cultural and commercial values, have put enormous pressures on the fish resources and displaced many other users.

    Adequate alternatives for safeguarding fishermen excluded from the resource do not exist and fisheries continue to be used for conflicting social and economic purposes.

- Inadequate opportunities for meaningful public involvement at all stages of the fisheries management process.

  - Although the public and stakeholders have been increasingly involved in some activities associated with fisheries management, such as fish enhancement, they have not been effectively involved in the conservation, management and allocation of fish resources throughout the province.

- Insufficient knowledge about the resources and those who use them prevent timely management action.

- Poor public knowledge about the resources and their constraints have led to excessive demands and conflicts.

- Inconsistent decision-making process has contributed to conflicts about resource sharing.

- Current legislative mechanisms are time-consuming and involved.

LOSS OF FISH AND FISH HABITAT

Demand for fish in Saskatchewan - and elsewhere in the world - is greater than supply. This demand stems from the way the public perceives the resources and from the virtually unrestricted access to them (Figure 1). These originated with ideals about the use of fish and their habitats which emerged in North America as a reaction to the exclusive fishing and hunting rights held by many European landowners and aristocracies. The ideals included notions that fish and their habitats are resources held or owned in common by all citizens, that all citizens have access to them, and that no royalties or rents will be paid for their use. Although these allow citizens to harvest fish, they do not protect the resources from overexploitation and depletion because resources provided free are used to excess. As a result, they force fishermen to fight for their real or perceived shares to the detriment of the resource and society.

CAUSES

- Loss of fish through overharvesting as a result of increased numbers of fishermen, overlimits and use of illegal fishing gear.

    - Unrestricted access as a consequence of the multiple use policy has resulted in overfishing.

- The province treats its fish resources as common property and has not effectively resolved the resulting problems.

- Loss of fish habitat through incompatible land use practices by industry, agriculture and other sectors.

- Global warming may also cause lakes and streams to recede.

- Contaminants in fish lower their value and inhibit their use.

- Insufficient data on the amounts of fish resources available, amounts allocated to the various user groups, amounts harvested, and on the status of populations being harvested. This is especially critical in northern Saskatchewan.

- Fisheries management and enforcement activities have not always been effective and timely.

POOR ECONOMIC PERFORMANCE OF THE FISHERIES

Those who use the resources commercially have low and erratic incomes and are concerned about their security of tenure at lakes where they or their clients fish. In addition, costs of managing the resources exceed revenues received from fishermen and the fisheries.

CAUSES

- Flawed allocation of harvests among different user groups has occurred as a result of the virtually unrestricted access to the resources and by the public's perception that fish shall be free to everyone (Figure 1).

- The common property nature of the fish resources attracts excessive numbers of commercial fishermen/lodge operators. Each attempts to maximize his/her earnings, and because the profits are only shared among the participants, and not with the owners of the resource, they attract

even more individuals and encourage them to expand their operations until the cost of their capital and labor rises, and/or their harvests fall. As a result, financial returns in excess of the costs of fishing are ultimately eliminated and, because all operations are affected, the fisheries are left in depressed states. This is often described as the "tragedy of the commons" in the fishery.

- The true economic value of the fish resources is unknown and not well understood. The different uses for fish and their tangible and intangible values complicate the problem.

GOALS

The principal goal of fisheries management in Saskatchewan is to sustain the fish resources and to use them to contribute to the social and economic welfare of Saskatchewan citizens. Three secondary goals address the issues (Figure 2):

1. maintain sustainable supplies of fish, enhance them whenever possible, and maintain and restore their habitats;

2. reconcile the social, cultural, recreational and economic values of fish harvests on an individual lake basis; and,

3. provide opportunities for improving the economic performance of the fisheries.

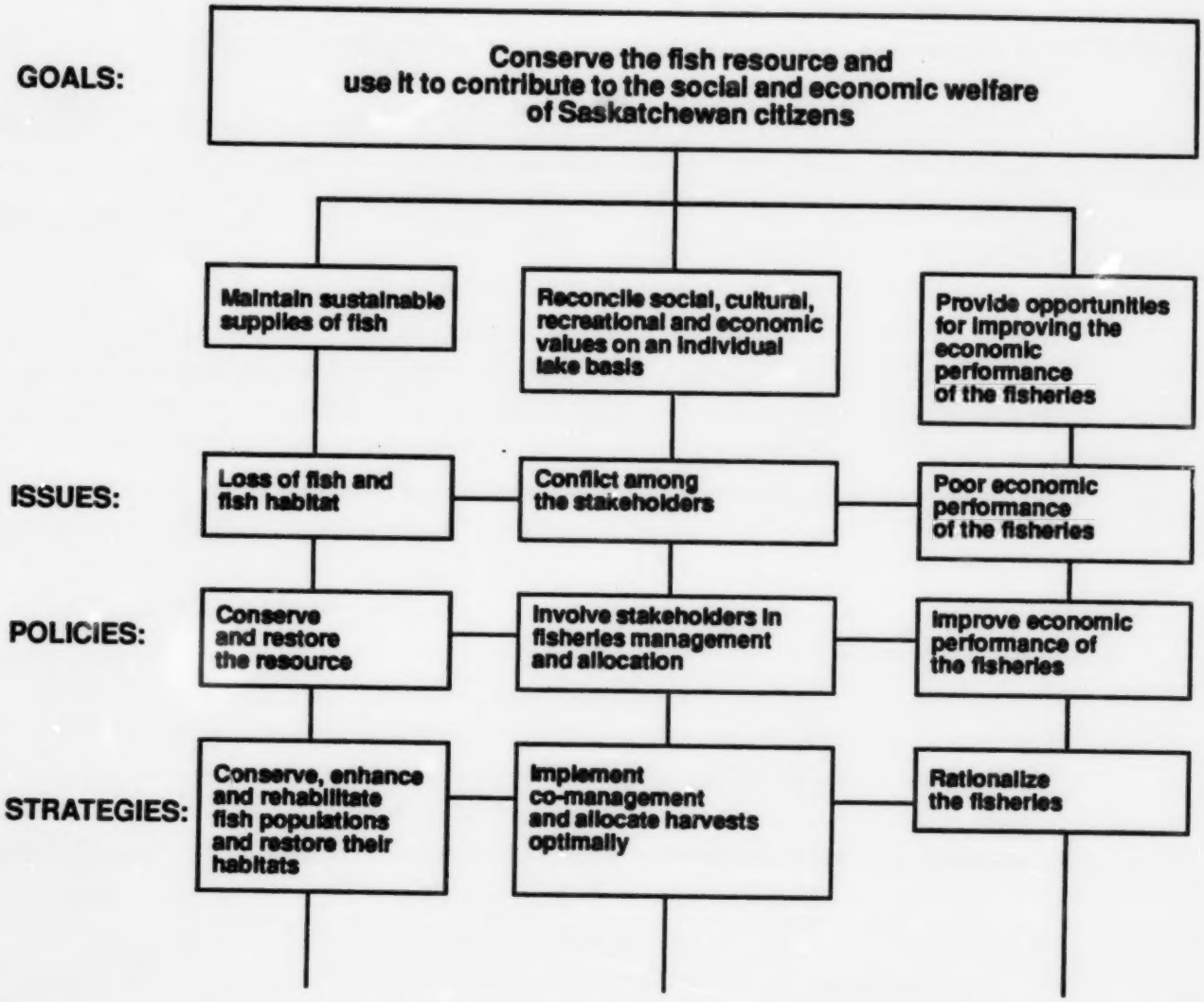

GOALS:
Conserve the fish resource and use it to contribute to the social and economic welfare of Saskatchewan citizens
Maintain sustainable supplies of fish
Reconcile social, cultural, recreational and economic values on an individual lake basis
Provide opportunities for improving the economic performance of the fisheries
ISSUES:
Loss of fish and fish habitat
Conflict among the stakeholders
Poor economic performance of the fisheries
POLICIES:
Conserve and restore the resource
Involve stakeholders in fisheries management and allocation
Improve economic performance of the fisheries
STRATEGIES:
Conserve, enhance and rehabilitate fish populations and restore their habitats
Implement co-management and allocate harvests optimally
Rationalize the fisheries

Figure 2. Goals, issues and strategies for Saskatchewan's fisheries in the 1990s.

POLICIES

The goals can be attained by implementing three principal policies which address the issues (Figure 2).

CONSERVE AND RESTORE THE FISH RESOURCES

Fish, which are the basis for the fisheries, are finite, renewable, valuable and limited in abundance. The primary reasons for the loss of resources are overharvesting and habitat loss. Therefore fish populations must be conserved, protected and when advantageous, enhanced. This means the amount of harvesting must be carefully regulated and controlled. Proper conservation ensures that fish populations support their fisheries while meeting their reproductive requirements without man's assistance. Habitats must also be protected and improved where necessary. Sufficient monitoring and data are required to ensure these activities are being carried out effectively.

INVOLVE STAKEHOLDERS IN FISHERIES MANAGEMENT AND ALLOCATION

Allocations that do not reflect stakeholder values are a major source of conflict among fishermen. Conflicts can be resolved through a co-operative process which offers fishermen an active role in management and allocation decisions, as well as provides a forum for resolving their differences. Involving stakeholders in fisheries management activities is a relatively new strategy known as co-management or co-operative management. Co-management involves the co-operative action by two or more parties with some degree of shared authority and responsibility for the resources. It has the ability to provide innovative solutions to complex problems at a time when uncertainty and change are the rule rather than the exception.

By involving stakeholders in the decision-making process, the policy attempts to provide support and opportunities to people as well as improve the skills they need in managing renewable resources.

By involving stakeholders in the decision-making process, the policy also attempts to reconcile the differing values and uses of the resources and, at the same time, allocate harvests to those who can use them in the most beneficial ways. This is known as determining best use.

Stakeholders will determine what constitutes best use by consensus on a lake by lake basis because what is best for one lake may not be best for another. They must derive criteria that are socially, culturally, recreationally and economically acceptable to meet the needs of their individual situations.

IMPROVE ECONOMIC PERFORMANCE OF THE FISHERIES

Few commercial net fishermen and outfitters receive earnings in excess of reasonable returns for their capital and labor; returns are, in fact, low and unstable. Rationalization of the size of these fisheries to the resources available should improve their economic returns. Commercial users also need assurance that their incomes and opportunities will not be diminished as a consequence of the increased demand for the resource. Careful attention to both costs and benefits is required if the fisheries are to be a source of value to the province rather than a burden. Management and enforcement costs currently exceed revenues. Revenue to government should be increased as a consequence of rationalization and should be based on rights to fish and the value of the resources.

Involving stakeholders in the process of rationalization enables them to priorize economic growth and diversification of their fisheries. This will have a beneficial effect on small communities because they will gain increased control over the utilization of resources on which they depend.

FISHERIES MANAGEMENT PRINCIPLES

The goals and policies of fisheries management in Saskatchewan are based on seven principles.

RETAIN PROVINCIAL RESPONSIBILITIES FOR FISHERIES MANAGEMENT

Although the strategic plan recommends devolving allocation responsibilities to stakeholders, Saskatchewan will retain its constitutional and legal rights and responsibilties for managing fish resources in the province. This means that Saskatchewan Parks and Renewable Resources (SPRR) will retain control over the biological components of resource management and ensure stakeholder decisions are consistent with provincial fisheries management goals and policies. This provides an opportunity for SPRR to assume a positive, leading role in fisheries management and allocation, and at the same time, work co-operatively with the stakeholders.

MAINTAIN HEALTHY ECOSYSTEMS AND SPECIES DIVERSITY

Healthy aquatic ecosystems are indispensable for the stability and security of human communities because they sustain processes vital to human life. The amount of fish that can be produced by, and harvested from, aquatic ecosystems is limited. Since human activities can diminish this productive capability, healthy fish communities can be ensured by managing both human activities and aquatic ecosystems.

MANAGE FISH POPULATIONS ON A SUSTAINABLE BASIS

Fish are the basis for the fisheries and must be conserved and protected. The supply of fish and aquatic resources in Saskatchewan is finite and cannot be significantly increased. Renewable resources must be harvested on the basis of their supplies, not on the basis of demand for them. The fish resources are held in trust by the Crown in right of Saskatchewan for its citizens. This means fishery managers must ensure they are maintained in

perpetuity by allocating stocks for maintenance and replenishment before allocating fish for harvest. This principle, and the one above, will ensure the benefits of healthy ecosystems and sustained fish populations will continue to accrue to Saskatchewan stakeholders.

PROVIDE FISH TO TREATY INDIANS AS REQUIRED BY THE RESOURCES TRANSFER AGREEMENT, 1930

These rights, which were included in an agreement between the governments of Canada and Saskatchewan, must be recognized and appropriate allocations made. This allocation must be made before all other allocations are made. A potential for conflict exists between this right, because of its acknowledged primacy, and the need to conserve the resources. Education and negotiation will be required to ensure that the resource base is maintained in perpetuity for all citizens.

MAINTAIN DIVERSITY OF OPPORTUNITY

Greater social and economic benefits will accrue to Saskatchewan citizens if a variety of fisheries are supported throughout the province. Although it is true that several fisheries may not be viable on a single lake, they may be viable on a group of lakes. Thus on some lakes, or in some areas, it is possible that recreational fishing may provide the most benefits, whereas on other lakes, or in other areas, commercial fishing may provide these. It is also possible that on some lakes, or in some areas, both fisheries together may provide the most benefits. The principle affirms the necessity of maintaining as many options as possible to maximize economic and social benefits.

Maintenance of diversity of opportunity should not be confused with the multiple use policy. The latter led to excessive demand because it resulted in expectations that no lake should be fished by a single group of fishermen. Diversity of opportunity means utilizing the fishery, or fisheries, that will provide the most benefits.

MAINTAIN PUBLIC ACCESS TO FISH RESOURCES

Traditionally the public have enjoyed access to fish resources as well as to parks, wildlife, timber and resource lands. Terms of access have changed over the years, and will continue to change as demands for finite resources increase. However the access principle itself will be maintained.

ACQUIRE DATA ON THE STATUS OF THE FISH RESOURCES AND THE FISHERIES

Sound fisheries management requires information about fish populations, their extent, condition, dynamics and habitats, as well as about the economic and social aspects of the fisheries, and those who use them.

Each fishery is affected by different factors. A complex system for acquiring and analyzing data is required because thousands of lakes and streams are being fished. Funding limitations will place more obligations on stakeholders to provide data on their use of fish, and on the value of their use, to support more effective management.

STRATEGIES AND TACTICS

There are three principal strategies for the 1990s (Figure 2): conservation; co-management; and rationalization. Co-management is placed in a central position because it is linked to conservation and rationalization. Each strategy consists of several tactics (Figure 3).

All tactics are not applicable everywhere in Saskatchewan. Because of the unequal distribution of lakes and people in the province, some tactics are more suitable for 'southern' lakes (i.e., most lakes in the Southern Management Zone and some in the Central Zone) and others are for 'northern' lakes (i.e., some lakes in the Central Zone and all lakes in the Northern Zone).

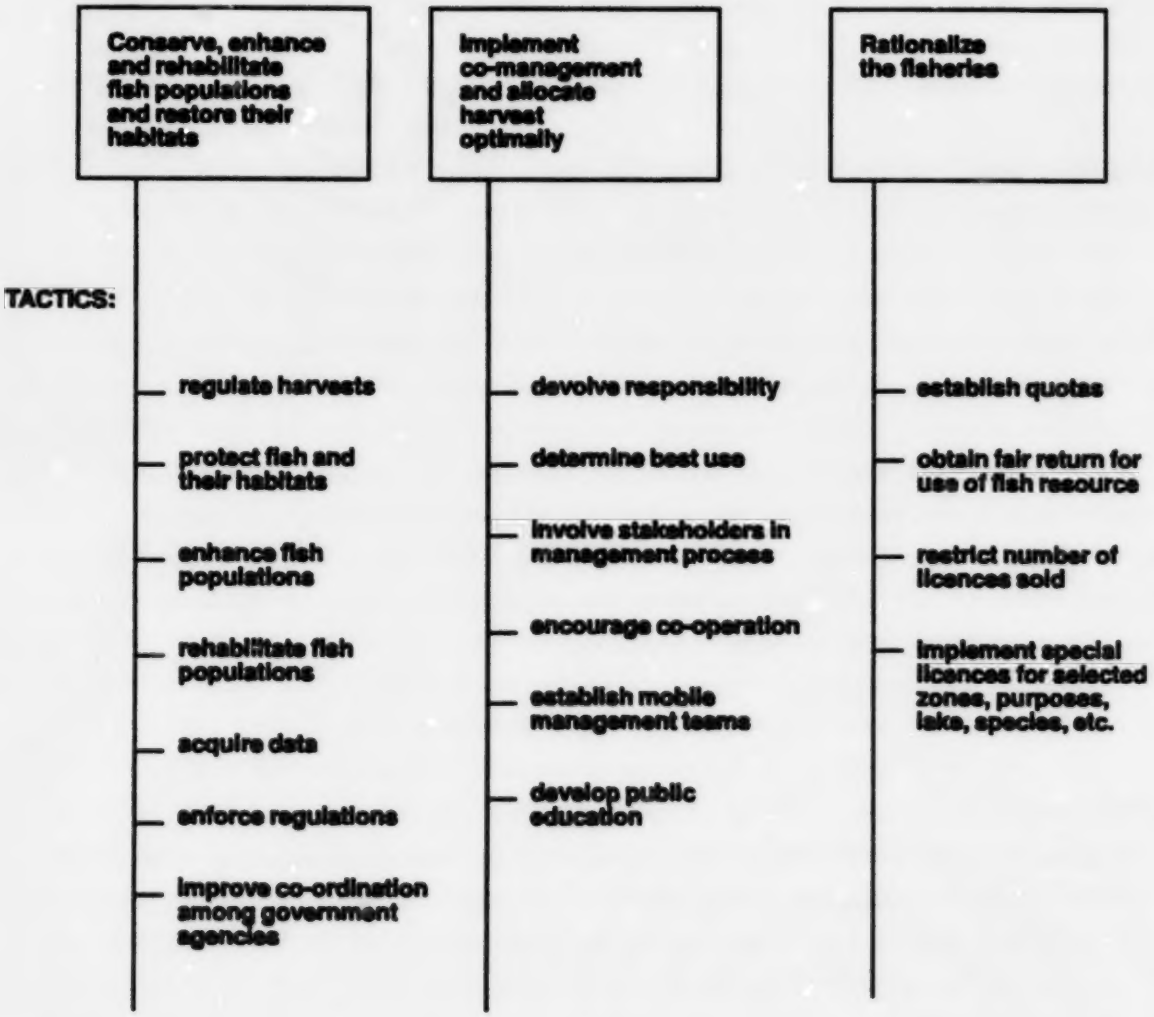

STRATEGIES:
Conserve, enhance and rehabilitate fish populations and restore their habitats
Implement co-management and allocate harvest optimally
Rationalize the fisheries
TACTICS:
regulate harvests
protect fish and their habitats
enhance fish populations
rehabilitate fish populations
acquire data
enforce regulations
improve co-ordination among government agencies
devolve responsibility
determine best use
involve stakeholders in management process
encourage co-operation
establish mobile management teams
develop public education
establish quotas
obtain fair return for use of fish resource
restrict number of licences sold
implement special licences for selected zones, purposes, lake, species, etc.

Figure 3. Strategies and tactics for Saskatchewan's fisheries for the 1990s.

Several tactics are identified for each strategy. The tactics, and how and where they may be applied, are briefly described.

CONSERVE, ENHANCE AND REHABILITATE FISH POPULATIONS AND RESTORE THEIR HABITATS

1. Regulate harvests to conserve stocks of fish by:

   a) establishing total allowable catches (TACs) for each lake and species; The TAC is the total catch or harvest permitted for a species of fish in a lake.

      TACs are determined by SPRR biologists, usually on an annual basis, and are usually set before the fishing seasons open. The process relates current harvests to sustainable supplies of fish and adjusts future harvests to allow the populations to maintain themselves.

      TACs have been set for many of the lakes that are being fished in the province, and over time, and with the assistance of stakeholders, will be extended to all lakes fished in Saskatchewan.

   b) controlling fishing by regulating catches and limiting effort, by imposing closed areas and seasons, and by restricting the type and amount of gear that may be used and size of fish that may be caught; and,

      These tactics, which control the amount of fishing, form the basis of the current fishing regulations used throughout the province. They will continue to be used where situations warrant.

   c) restricting entry to selected fisheries by controlling the numbers of licences that may be sold.

      This tactic would only be used on the advice of stakeholders where harvests are excessive because there are too many fishermen. Initially

it would be used experimentally at a few lakes until it had been evaluated.

The process will involve issuing a limited number of special licences for a specific lake. These licences may also be accompanied by one or more tags which must be attached to fish that are caught and retained.

2. Protect fish and their habitats and restore those which have been degraded by man's activities.

   This work is being done throughout the province either by SPRR staff, stakeholders, proponents of industrial activities, or some combination of the above. The nature of the work varies according to the restoration required. These activities will continue into the future.

3. Enhance fish populations to supplement natural reproduction where possible.

4. Rehabilitate fish populations to compensate for the inadequacies of regulation and protection where possible.

   Tactics #3 and #4 are mainly confined to 'southern' lakes because of their small size. These programs depend on the fish culture station at Fort Qu'Appelle and this facility will continue to provide a wide variety of fish in the 1990s and beyond.

   These activities are examples of participatory co-management that currently exist in southern Saskatchewan. Most of the enhancement projects have been co-operative, that is, an organization or agency other than the province acts as the proponent and contributes money and/or volunteer labor. Local chapters of the Saskatchewan Wildlife Federation have been frequent co-operators. Projects to date include rearing ponds, habitat improvement, trout ponds, aeration systems, introduction of new species, experimental hatcheries and fishways.

The need for this type of participatory co-management will not diminish and may well increase in future.

5. Acquire sufficient data about fish, fishing, habitats and fishermen to support management activities by:

   a) setting priorities for the acquisition of information based on resource management needs;

   b) improving techniques for the acquisition and application of knowledge to protect and rehabilitate fish communities and habitat;

   c) improving the understanding of the impacts of management actions and environmental changes on fish populations;

   d) developing an understanding of the socio-economics of fishing;

   e) deriving a true economic value for fish irrespective of the fisheries; and,

   f) strengthening efforts to integrate information so that it is useful in decision making.

All of these tactics are currently employed in Saskatchewan to a greater or lesser degree. Staff reductions and re-assignments, and the lack of a comprehensive strategy for evaluating the status of fish populations have resulted in a failure in recent years to collect all of the data required to properly manage the province's fish populations.

Implementation of a fisheries allocation strategy will result in a greater demand for data as well as a greater interest by stakeholders in the process of data collection and analysis. Given the current restrictions in funding, it is unlikely that the province will be able to provide the staff required.

Because TACs and harvest allocations must be based on sound data, stakeholders may ask to oversee, and perhaps even participate in the collection and analysis of data. This form of co-management will be welcomed because the data on which allocations are made will be subject to intense scrutiny. To avoid controversy about allocations based on them, the data must be as complete and as unbiassed as possible. Stakeholder participation will ensure the data meet these criteria.

6. Enforce fisheries regulations firmly and effectively to ensure fish and their habitats are conserved and protected.

   This tactic is currently operational throughout the entire province and will continue into the future.

7. Improve co-ordination among government agencies sharing responsibility for managing aquatic ecosystems by:

   a) developing government policy and legislation to clarify agency roles and responsibilities;

   b) developing government policy and legislation to ensure fisheries input into decisions affecting aquatic ecosystems;

   c) strengthening formal mechanisms for consultation among government agencies to improve co-ordination of resource management; and,

   d) expanding co-operative programs to increase effectiveness and to ensure a comprehensive approach to ecosystem management.

   These tactics are currently being implemented and will continue into the future.

IMPLEMENT CO-MANAGEMENT WITH THE STAKEHOLDERS AND ALLOCATE HARVESTS OPTIMALLY

1. Devolve responsibility for allocating fish harvests to local stakeholders but retain responsibility for determining the amount of resource available at each lake within SPRR.

   Allocation is a two-step process. The first is determining the amount of fish available for harvest at each lake and the second is assigning this harvest to the eligible users. Currently both functions remain within the Department. The strategic plan suggests that SPRR retain the first function and that the stakeholders assume responsibilities for the second.

2. Foster co-management by encouraging all stakeholders to participate in the decision-making process which determines the best uses for fish harvests at lakes in which they have interests.

   Stakeholder involvement in fisheries management is consultative, advisory and participatory. This process is already well underway in Saskatchewan and it is anticipated that it will gain momentum in the 1990s.

   Consultation includes communication and discussion which accompany public policy development in a democracy. It is part of the feedback and control mechanisms through which government keeps its policies and programs responsive to public needs and wants. In the 1980s consultation took the form of public reviews of a series of discussion papers on fisheries matters as well as meetings with a variety of user groups to discuss specific issues or receive feedback on policies and programs.

   At the advisory level, input from stakeholders tends to be through representatives who sit on official or semi-official bodies which review new policies and programs. In the 1980s these included the provincial Fish Advisory Committee as well as lake management committees at Lac la Ronge, Lac la Plonge, and Dore Lake.

Participation is a form or partnership in which decision making and action is shared between government and stakeholders. In fisheries management, stakeholder participation means taking an active role in some activity, project or function, and assuming both authority and responsibility for it. Stakeholders must address the concerns of all parties and reconcile these into forms of action acceptable to all.

Examples of participatory co-management in the 1980s include the fish enhancement program described above, as well as several commercial fishermens' co-operatives. The latter have made decisions of socio-economic significance within their fisheries including allocation of quotas, eligibility, performance criteria, and seasons and logistics.

3. Involve local stakeholders in the management process by:

a) encouraging them to develop local committees responsible for determining the best use of fish resources at each lake and for allocating harvests among eligible users;

Local management committees, which comprise representatives of all stakeholders, are vital to the success of participatory activities in fisheries management. Members must consider all points of view about the uses of the resource, status of habitats, regulations, economic and social concerns, data needs, etc., and reconcile these into decisions acceptable to all. The committees, which may be formal or informal, are useful forums for resolving differences and working out acceptable alternatives and actions.

b) encouraging them to participate in management decisions affecting lakes in which they have interests;

These decisions will differ from lake to lake. In general, decisions about 'southern' lakes will tend to focus on habitat restoration, enhancement, and control of angling. Decisions about 'northern' lakes

will tend to focus on controlling all types of fishing, determining best use, and allocating quotas.

Examples of these activities, which began in Saskatchewan in the 1980s, have been described above. Thus it is expected that fish enhancement programs would continue in lakes in the southern half of the province, and that local lake management committees and commercial fishermens' co-operatives would continue in the northern half.

c) encouraging them to assist in the collection, analysis and interpretation of data; and,

The large number of lakes fished each year in Saskatchewan precludes the collection of comprehensive data from each of them by SPRR staff. Stakeholder assistance in providing these data and in analyzing and interpreting these data will not only be welcomed but will benefit allocation and management activities.

d) providing them with data and information about their lakes and fisheries, as well as about the values and benefits of healthy aquatic ecosystems.

Stakeholders cannot know too much about the environment, fish and fisheries in waterbodies in which they have interests. In fact, the more they know and understand these complex matters, the more likely they will make the correct decisions about them.

4. Encourage opportunities to work co-operatively with non-government organizations.

Although government retains the power to overrule decisions that are not in the best interests of the environment, fish, or stakeholders, government is not the only agency with knowledge about aquatic resources, ability or funds to do work. Stakeholders are encouraged to seek advice and assistance of qualified individuals or agencies which can provide

assistance in environmental or fisheries matters or in reconciling different points of view.

5. **Establish a mobile management team to assist regional managers and stakeholders in the implementation of local lake management and allocation committees.**

   A mobile management team is proposed to assist fisheries managers and stakeholders in their lake management committees particularly in the Central and Northern Management Zones where the issues are complex and conflicting. The principal functions of the team would be to listen to problems, to test and develop innovative solutions, to negotiate and assist in the process of reconciliation, to teach and communicate, and to assist managers and stakeholders alike to become self-sufficient.

   The guiding philosophies would be to involve the stakeholders in all aspects of fisheries management, to encourage them to work with the regional managers and take whatever initiatives are required to resolve their problems, to encourage them to be innovative in their thinking, and to constantly experiment. The last item means supporting failures and learning how to do better.

6. **Develop and encourage public education and involvement programs based on the ecosystem approach to managing fisheries on a sustainable basis.**

   Participation in a co-operative approach to fisheries management will require knowledgeable and sophisticated stakeholders. They will acquire this through actual "hands on" experience acquired as they perform the work associated with fisheries management. They will also learn from programs developed for children and adults. The latter will require the services of a specialist whose duties would be to develop these programs and the curricula and work with educational authorities to have them adopted by the school system.

RATIONALIZE THE FISHERIES

1. **Establish quotas for each lake and species which ensure sufficient fish are allocated for maintenance of the resource.**

   This tactic requires the establishment of three priorities. The first must be the allocation of fish for resource maintainance. The fish resources are held in trust by the Crown in right of Saskatchewan for its citizens. This means fisheries managers must ensure it is maintained in perpetuity by allocating stocks for maintenance and rehabilitation before allocating fish for harvest. The second is providing fish to Treaty Indians for food under the terms of the **Resources Transfer Agreement**. These rights must be recognized and appropriate allocations made. The third is allocating the remaining surplus production, if any, among all other users. These include subsistence fishermen, anglers, commercial net fishermen and outfitters.

2. **Establish quotas for each lake, fishery and species on the basis of current harvests.**

   Quotas are portions or shares of TACs given or allocated to one or more fishermen. They are derived from the TACs, which are the total catches, or harvests, permitted for each species of fish in a lake.

   Quotas are usually assigned initially on the basis of current harvests. This means that if one fishery takes, say, 30% of the total harvest of a species, then this fishery will be assigned a quota which is 30% of the TAC for that species.

   Quotas may be assigned to an entire fishery, such as a recreational fishery, or they may be assigned to individual fishermen within a fishery, such as to individual commercial net fishermen at a lake. Under an individual quota system, all or part of the TAC is divided among individual fishermen on a percentage basis determined from their past participation.

The quota for each fisherman is determined by multiplying his proportion by the quota for the fishery.

3. Obtain a fair return for the use of the fish resources and cover the costs of management and administration.

The fish resources of Saskatchewan are renewable, finite and scarce. They are, as a result, valuable and are a source of revenue to the province but the revenue from the sale of fishing licences does not cover the costs of regulating and managing provincial fisheries. The shortfalls are currently made up from general revenues but should be borne by those who use the resource and benefit from it.

4. Consult stakeholders and where they desire:

a) restrict the number of licences for each lake and fishery on the basis of quota availability as required for conservation; and,

Fish resources are finite and limited in production. Sustainable development requires that harvests be based on the supplies of fish in lakes, and not on the basis of demand for them. Thus it may be necessary to limit harvests, and thereby, the numbers of licences issued for certain species at some heavily fished lakes. These limitations must be determined on the basis of the available quotas and should be developed on the basis of discussions with, and requests from, lake management committees.

b) implement special licences for selected zones, purposes, lakes, species, etc., for purposes of conservation.

Special licences may be required to limit harvests of certain species in selected lakes, areas, etc., because fisheries management is based on maintaining sustainable development. These would be implemented on the basis of discussions with, and requests from, lake management committees.

The following tactics, which deal with transferable quotas, were not generally accepted during the public consultation process and will not be implemented by government. They are stated here because they are widely used and it is possible stakeholders may wish at some future time to utilize them. ***Transferable quotas would only be implemented when specifically requested by stakeholders at a lake who must all agree to this action.***

a) establish property rights for the commercial users of the resource with individual transferable marketable quotas based on previous participation in the commercial net and outfitting fisheries;

Quotas are a means of allocating property rights. Individual transferable quotas (ITQs) are being utilized in many places in Canada and elsewhere in the world. They are a means of allocating to one or more individuals a transferable or tradable right to harvest a specific quantity of fish. The purpose is to achieve efficiency in harvesting by allowing those whose costs are least or whose capacity is greatest to obtain additional rights from others.

b) facilitate the transfer of these rights by sale or rent among the stakeholders; and

The key feature of ITQs is their transferability which enables them to be subdivided or combined in any manner. This means that those who have them can augment them with more rights, divide them into rights with fractional entitlements, or dispose of them completely by gift, sale or rent.

c) allow SPRR to hold the quotas for the subsistence and recreational fisheries and augment them by purchasing more from the commercial users of the resource or relinquish them by selling them to the commercial users of the resources.

Recreational fisheries will also require quotas for each species harvested in some lakes. These quotas could be held by the

Department in trust for anglers. If the demand were sufficient at lakes with mixed fisheries, SPRR could increase the recreational quotas for a species by purchasing them from commercial users. On the other hand, if the anglers were not using all of their quotas, SPRR could sell the unused portions to commercial users.

IMPLEMENTATION

The plan is centered around three principal strategies: conservation, co-management and rationalization. The conservation strategy and many of its tactics are in place and functioning.

Co-management and rationalization are new. The need for them does not exist at all lakes in Saskatchewan and, as a result, these processes need not be implemented everywhere at once. Instead implementation would occur on a lake by lake basis and will begin either as a result of consultations with, or requests from, stakeholders.

Initially, co-management and rationalization should be attempted experimentally at lakes where there are few stakeholders and simple situations. These small projects will provide opportunities for everyone concerned to develop and refine the necessary skills and techniques and to make these processes work. Larger and more complex situations would be attempted incrementally over time. It is expected that these activities will proceed rapidly as familiarization with, and demand for, them grows.

Fisheries management plans, which reflect the broad needs, opportunities, and priorities to be addressed, as well as constraints presented by local geography, hydrology and population distribution, will be developed for each region in consultation with stakeholders. The ultimate goal is to develop individual lake and stream management plans with the help of interested stakeholders. These will be implemented through co-management wherever possible and desirable.

PROGRAM ACTIONS

The strategic plan will be implemented through SPRR's existing program delivery system, which comprises eight regions: La Ronge, Meadow Lake, Prince Albert, Hudson Bay, Saskatoon, Swift Current, Regina and Melville. Issues will be identified in each region, alternative courses of action proposed and evaluated, management plans prepared, and appropriate actions taken through locally-based processes of consultation and co-management.

Some actions are described as examples of activities which have been done, and which may continue to be done in future. They are presented on the basis of fisheries management zones because problems and issues within a zone tend to be similar.

SOUTHERN MANAGEMENT ZONE

This area includes the Swift Current, Saskatoon, Regina and Melville Regions, as well as the southern portions of the Meadow Lake, Prince Albert and Hudson Bay Regions. Most of the people in Saskatchewan live in this area and most of the fishing occurs here. Waterbodies in this zone are influenced by the amount of snow and rain they receive. Their numbers are limited and and many are affected by man's activities.

The small number of waterbodies dictates that program actions be directed to existing streams and reservoirs. Habitat protection and rehabilitation, intensive management and enhancement are important activities.

Habitat protection and rehabilitation. This is a major concern in the Southern Zone because of the limited number of waters and the impact of man's activities on them. Dams, reservoirs, irrigation, and lake and stream shoreline alterations have positive and negative impacts on fish habitat. All habitat must be protected, and degrated habitat must be restored.

Stream enhancement. This is a relatively new initiative of the Fish Enhancement Program and will continue as a priority activity in the 1990s. Stream enhancement projects make use of local features and provide angling opportunities with low construction and maintenance costs. Co-operative projects are popular with local users, and several have won conservation awards.

Intensive fisheries management. Stocking reservoirs provides angling opportunities at reasonable cost. Reservoirs are used for multiple purposes, and stocking fish for angling is compatible with most of these. SPRR co-operates with municipalities and wildlife groups in the development of these projects.

The Southern Zone is also an area in which opportunities exist for the development of urban or "doorstep" angling, and for improvement of access for physically handicapped people, senior citizens and children.

CENTRAL MANAGEMENT ZONE

This area includes the Meadow Lake, Prince Albert, Hudson Bay and La Ronge Regions. It is a transition between the prairie Southern and forested Northern Zones. It has more waterbodies than the Southern Zone but fewer than the Northern. Most are natural and occur in attractive settings. Although few people live here the lakes support subsistence, recreational, outfitting and commercial net fishing and provide about half the total provincial harvest of fish.

Because of the number and variety of users, large harvests and finite supply, the principal program actions will be to rationalize the fisheries and manage them on the basis of sustainability. A range of other program actions will be implemented, as required, based on local problems and priorities.

Conservation. A variety of conservation measures will be implemented at individual lakes or groups of lakes. Because of the number and size of lakes in this zone, they must be managed on the basis of sustainability. Some

require enhancement but this must be done selectively because the existing hatchery cannot service all needs in this zone.

Harvest quotas. Quotas must be established for each lake, fishery and species on the basis of current harvests and total allowable catches.

Catch and release angling. This program will educate users and highlight conservation, and at the same time increase the diversity of available angling opportunities by preserving selected fish stocks in a lightly exploited state.

Special angling limits and area closures. These measures will be taken to mitigate the overharvest or potential overharvest of game fish.

Separate species quotas for the commercial net fishery. These quotas have been implemented for all heavily fished waters, and will be applied whenever new quotas are established. Species management will remain a cornerstone of this fishery.

Rationalization. A new approach to allocation which involves determining the best use of the resource through co-management is central to the strategy for the 1990s.

Lake management committees. Fisheries management and allocation decision making by committees representing all stakeholders at a lake will be a major initiative in the Central Zone for the 1990s. This is an expansion and formalization of an existing initiative. Delegation of responsibility for allocating harvests among eligible stakeholders will be a feature of this program.

Lake management agreements. These agreements will provide for reciprocal actions between SPRR and users to facilitate mutual management interests on a waterbody. These will be pursued with outfitters, commercial net fishermen, anglers and subsistence fishermen.

Individual transferable quotas (ITQs). ITQs will enable stakeholders to shift to an agreed best use of the fisheries at lakes through economic means. Commercial users will be able to better chart their own futures, and make decisions regarding the size and types of operation while ensuring the resources are harvested at sustainable levels. This is known as "sustainable development".

Fish enhancement. A wide variety of projects under the Fish Enhancement Program will be implemented in the Central Zone. Lake aeration, lake and stream habitat improvement and trout pond development are some popular projects which will continue to provide new and diversified angling opportunities in the 1990s.

Habitat improvement. Actions will be taken to protect and enhance existing habitat to preserve naturally reproducing fish populations.

NORTHERN MANAGEMENT ZONE

This zone includes the Meadow Lake and La Ronge Regions. More than 70% of the lakes in the province occur here. The principal fisheries are commercial, subsistence and outfitting, and they are managed on the basis of sustainability. As in the Central Management Zone, because of the number and variety of users, large harvests and finite supply, the principal program actions will be to sustain the resource and rationalize the fisheries.

Conservation. The conservation program actions to be implemented in the Northern Managment Zone are similar to those proposed for the Central Zone. The number and size of lakes, and their remoteness, makes it imperative that the fisheries be managed for sustainability. Maintenance of fishing quality is also important, hence trophy fish protection and catch and release programs will receive increased attention.

Harvest quotas, catch and release angling, special angling limits and area enclosures, and *separate species quotas for the commercial net fishery.* These program actions are similar to those described for the Central Zone.

High quality angling. The High Quality Angling program, which applies reduced limits to specific waterbodies to maintain existing angling quality, has been well received by outfitters, and will be expanded in this zone in the 1990s.

Rationalisation. Rationalization and allocation of harvests through co-management with stakeholders will be important program actions in this zone.

Lake management committees, lake management agreements, and **individual transferable quotas (ITQs).** These program actions are similar to those described for the Central Zone.

Fish enhancement and habitat protection and improvement. Actions will be taken to protect and enhance, where feasible, existing habitat to preserve naturally reproducing fish populations. Some fish enhancement activities will also be undertaken to bolster fish populations in small waterbodies. Maintenance of fish populations in large waterbodies is impractical in terms of the cost and numbers of fish required. Moreover these populations are managed better on the basis of sustainability.

ENTIRE PROVINCE

In addition to the above programs which apply to specific areas, programs will be developed which provide a variety of *educational opportunities* for Saskatchewan residents of all ages. School curriculum material and general informational material and workshops will be used to increase public awareness of fish habitat and aquatic ecosystems, the importance of sustainable development in fisheries management, and the opportunities and benefits of consultation and co-management.

Increased attention will be given to other species, such as burbot, through programs such as, "Don't waste the taste", to both sustain and develop fisheries based upon them.

The single most important feature of the plan for the 1990s is the need for the increased involvement of stakeholders in the fisheries management decision-making process. Government simply cannot address all the problems and resolve all the issues confronting the fisheries and, as a result, it must rely on stakeholders for assistance. The term co-management reflects the co-operative nature of the process wherein each group of stakeholders must contribute something of value to the process in order to benefit from it. Thus it is truly a two-way street in which government and stakeholders participate equally for the sustainable development of Saskatchewan's fisheries.

CONCLUSION

The foregoing summarizes strategies for implementation in the 1990s. It provides a framework for bringing stakeholders and resource managers together to co-operatively manage Saskatchewan's fisheries in the 1990s. It is hoped this partnership will engender a renewed sense of stewardship in managing a valuable renewable resource.

The plan resulted from extensive consultation with major user groups and other stakeholders in Saskatchewan. The Department gratefully acknowledges the assistance, comments and suggestions from all who took the time to examine the proposals and provide comments.